Exam simulation

ATPL - Airline Transport Pilot license - Mass and Balance

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STUDENT NAME:	DATE AND TIME:

01. For an aircraft flying a true track of 360° between the 5°S and 5°N parallels, the precession error of the directional gyro due to apparent drift is equal to:

a) -5°/hour

b) +5°/hour

c) 15°/hour

d) Approximately 0°/hour

02. During a flight to Europe planned in North Atlantic high-level airspace, you expect to cross the oceanic entry point later than the estimated time. How should you proceed?

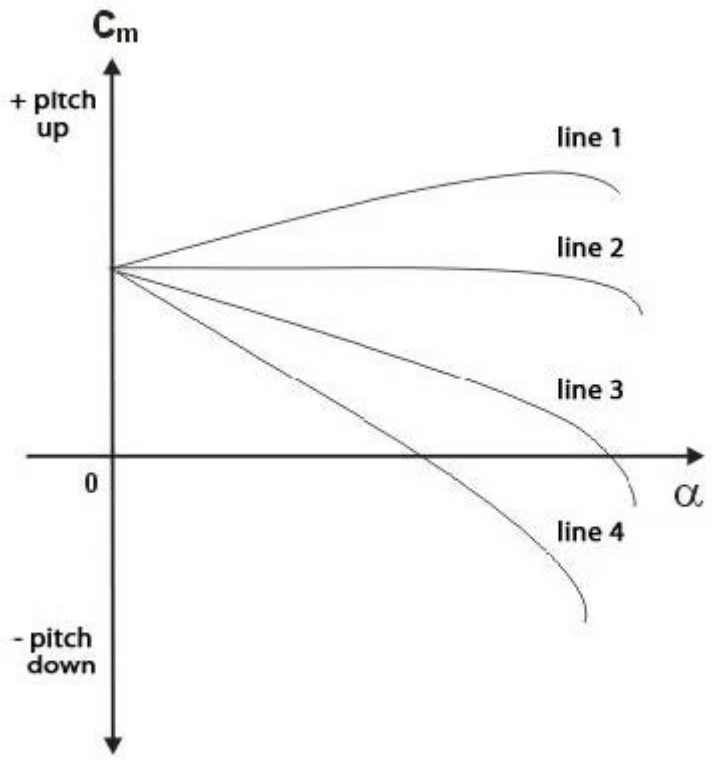
a) within the organised daytime track system

b) within the organised night-time track system

c) out of the validity period of organised flight track system

d) within the polar track system

03. The pitching moment versus angle of attack line in the diagram, which corresponds to a CG located at the neutral point of of a given aeroplane at low and moderate angles of attack is:



a) Line 2.

b) Line 1.

c) Line 4.

d) Line 3.

04. The Trip Fuel for a jet aeroplane to fly from the departure aerodrome to the destination aerodrome is 5 350 kg. Fuel consumption in holding mode is 6 000 kg/h. The quantity of fuel which is needed to carry out one go-around and land on the alternate airfield is 4 380 kg. The destination aerodrome has a single runway. What is the minimum quantity of fuel which should be on board at take-off?

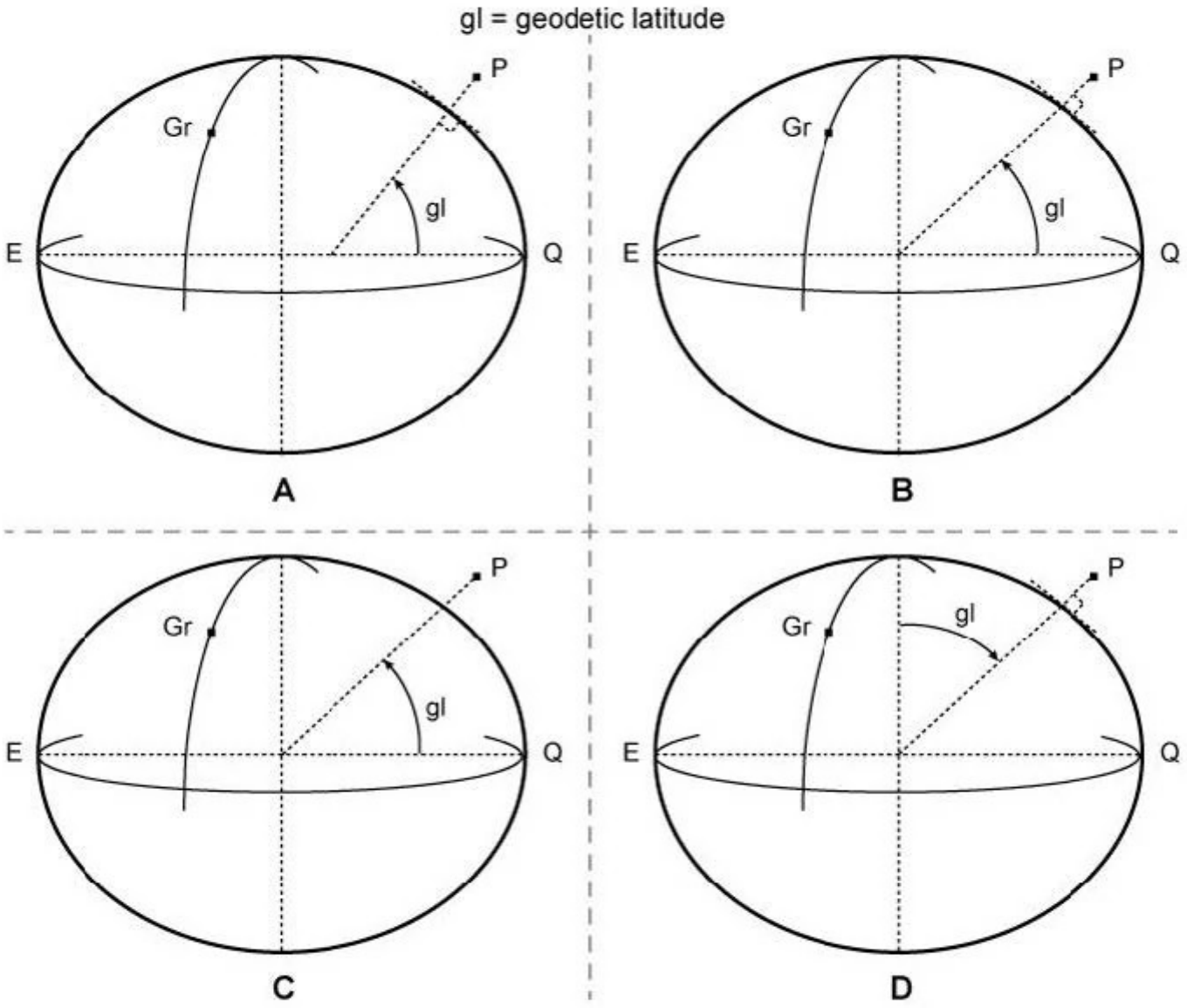
a) 13 000 kg

b) 13 230 kg

c) 11 730 kg

d) 14 730 kg

05. Refer to figure: Which figure in the appendix represents the geographic latitude of position P, which is situated above the surface of the ellipsoid?


gl = geodetic latitude
P
Gr
gl
E
Q
A
B
C
D

a) Figure C
b) Figure D
c) Figure B
d) Figure A

06. A read back is not needed for the following message:

a) Clearance to backtrack on RWY in use

b) Wind velocity

c) Altimeter setting

d) Clearance to take off

07. The tangent from the origin to the power required against true airspeed curve, for a jet aeroplane, determines the speed for:

a) Maximum endurance

b) Critical angle of attack

c) Maximum specific range

d) Minimum power

08. A microburst phenomenon can arise in the:

a) Downdraught of a cumulonimbus at the mature stage.

b) Updraught of a cumulonimbus at the growth stage.

c) Downdraught of a cumulonimbus at the initial stage.

d) Updraught of a cumulonimbus at the mature stage.

09. A fire occurs in a wheel and immediate action is required to extinguish it. The safest extinguishant to use is:

a) Water

b) CO2 (carbon dioxide)

c) Dry powder

d) Foam

10. The speed of sound at the sea level in standard atmosphere is:

a) 644 kt

b) 1059 kt

c) 661 kt

d) 332 kt

11. Refer to CAP697 Section 4 - MRJT1 Page 19 Figure 4.5.1 En-route Climb 280/0.74 Given: brake release mass 57500 kg temperature ISA -10°C head wind component 16 kt initial FL 280 Find: still air distance (NAM) and ground distance (NGM) for the climb

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Press. Alt. ft	Units Min/kg. NAM/Kt	68000	66000	64000	6
37000	Time/Fuel Dist/TAS				3 1
36000	Time/Fuel Dist/TAS			28/2050 166/388	2 1
35000	Time/Fuel Dist/TAS	32/2350 195/390	27/2000 156/385	24/1850 139/383	2 1
34000	Time/Fuel Dist/TAS	26/2000 152/383	23/1850 136/381	21/1700 123/379	2 1
33000	Time/Fuel Dist/TAS	23/1850 133/378	21/1750 121/376	20/1650 112/375	1 1
32000	Time/Fuel Dist/TAS	21/1750 120/374	20/1650 111/373	19/1550 103/372	1 9
31000	Time/Fuel Dist/TAS	20/1700 110/370	19/1600 102/369	18/1500 95/368	1 8
30000	Time/Fuel Dist/TAS	19/1600 101/366	18/1550 95/365	17/1450 89/1364	1 8
29000	Time/Fuel Dist/TAS	17/1550 92/361	16/1450 87/360	16/1400 81/360	1 7
28000	Time/Fuel Dist/TAS	16/1450 84/356	15/1400 79/356	15/1300 75/355	1 7
27000	Time/Fuel Dist/TAS	15/1400 77/352	14/1350 73/351	14/1250 69/351	1 6
26000	Time/Fuel Dist/TAS	14/1350 71/348	14/1250 67/347	13/1200 63/347	1 6
25000	Time/Fuel Dist/TAS	13/1300 65/344	13/1200 61/343	12/1150 58/343	1 5
24000	Time/Fuel Dist/TAS	13/1200 60/340	12/1150 56/340	11/1100 54/340	1 5
23000	Time/Fuel Dist/TAS	12/1150 55/336	11/1100 52/336	11/1050 49/336	1 4
22000	Time/Fuel Dist/TAS	11/1100 50/333	11/1050 48/333	10/1000 45/333	1 4
21000	Time/Fuel Dist/TAS	10/1050 46/330	10/1000 44/329	10/1000 42/329	9 4
20000	Time/Fuel Dist/TAS	10/1000 42/326	9/950 40/326	9/950 38/326	9 3
19000	Time/fuel Dist/TAS	9/950 39/323	9/950 37/323	8/900 35/323	8 3
18000	Time/Fuel Dist/TAS	9/900 35/320	8/900 34/320	8/850 32/320	8 3
17000	Time/Fuel Dist/TAS	8/900 32/317	8/850 31/317	8/800 29/317	7 2
16000	Time/Fuel Dist/TAS	8/850 29/314	7/800 28/314	7/750 27/314	7 2
15000	Time/Fuel Dist/TAS	7/800 26/312	7/750 25/312	7/750 24/312	6 2
14000	Time/Fuel Dist/TAS	7/750 24/309	6/700 23/309	6/700 22/309	6 2
13000	Time/Fuel Dist/TAS	6/700 21/306	6/700 20/306	6/650 19/306	6 1
12000	Time/Fuel Dist/TAS	6/650 19/304	6/650 18/304	5/600 17/304	5 1
11000	Time/Fuel Dist/TAS	5/650 17/301	5/600 16/301	5/600 15/301	5 1
10000	Time/Fuel Dist/TAS	5/600 15/299	5/550 14/299	5/550 13/299	5 1
8000	Time/Fuel Dist/TAS	4/500 11/294	4/500 10/294	4/500 10/294	4 9
6000	Time/Fuel Dist/TAS	4/450 7/290	3/400 7/290	3/400 6/290	3 6
1500	Time/Fuel	2/250	2/250	2/250	2

Fuel Adjustment for high elevation airports Effect on time and distance is negligible	Airport Fuel Ac

Figure 4.5.1 En-route Climb 280/7

a) 59 NAM 62 NGM
b) 62 NAM 59 NGM
c) 71 NAM 67 NGM
d) 67 NAM 71 NGM

12. AIP Which part of the AIP contains information relating to existing prohibited, restricted and danger areas?

a) GEN
b) AD
c) ENR
d) The AIP does not contain this information

13. For the purpose of completing the Mass and Balance documentation, the Operating Mass is considered to be Dry Operating Mass plus

a) Ramp (Block) Fuel Mass.
b) Trip Fuel Mass.
c) Take-off Fuel Mass.
d) Ramp Fuel Mass less the fuel for APU and run-up.

14. The zero fuel mass of an aeroplane is always:

a) The take-off mass minus the wing fuel mass.
b) The take-off mass minus the fuselage fuel mass.
c) The take-off mass minus the mass of take-off fuel.
d) The maximum take-off mass minus the take-off fuel mass.

15. An aircraft transmitting a distress message is required to give its position as:

a) The most accurate possible using GPS if fitted.
b) Present or last known position, altitude or level and heading.
c) Position relative to a VRP.
d) Latitude and longitude.

16. When letters are used for registration mark combinations shall not be used which might be confused with urgent signals for example:

a) TTT

b) LLL

c) RCC

d) FFF

17. At 47° North the chart distance between meridians 10° apart is 5 inches. The scale of the chart at 47° North approximates:

a) 1: 8 000 000

b) 1: 3 000 000

c) 1: 6 000 000

d) 1: 2 500 000

18. When may the name of the location or the call sign suffix in the call sign of an aeronautical station be omitted?

a) Only after the aeronautical station has used the abbreviated call sign

b) Never

c) In dense traffic during rush hours

d) When satisfactory communication has been established and provided it will not be confusing to do so

19. What according to ICAO Annex 10 is the range of a locator?

a) 25 - 50 NM

b) 50 - 100 NM

c) 10 - 25 NM

d) 100 - 300 NM

20. The pressure system indicated when, in a vertical cross section, the lower situated pressure surfaces bulge upward and the higher situated pressure surfaces bulge downward is a:

a) Cold low pressure area

b) Warm low pressure area

c) Cold high pressure area

d) Warm high pressure area

21. In order to indicate unlawful interference with the planned operation of the flight, the aircraft Secondary Surveillance Radar (SSR) transponder should be selected to:

a) 7600

b) 7500

c) 7000

d) 7700

22. The approach climb requirement has been established to ensure:

a) Minimum climb gradient in case of a go-around with one engine inoperative.

b) Manoeuvrability during approach with full flaps and gear down, all engines operating.

c) Manoeuvrability in case of landing with one engine inoperative.

d) Obstacle clearance in the approach area.

23. On board a non-pressurised aircraft, 10% of the passengers shall be supplied with oxygen throughout the entire flight time, after 30 minutes at pressure altitude greater than:

a) 10 000 ft but not exceeding 13 000 ft

b) 11 000 ft but not exceeding 12 000 ft

c) 11 000 ft but not exceeding 13 000 ft

d) 10 000 ft but not exceeding 12 000 ft

24. An integrated aeronautical information package consists of the following elements

a) AIP, including amendment service

b) Supplements to AIP, NOTAM, AIC and checklist summaries

c) AIP, supplements to AIP

d) NOTAM and PIB

25. An aeroplane suffers an explosive decompression at an altitude of 31000 ft . What is the initial action by the operating crew ?

a) To put on oxygen masks

b) Place the seat belts sign to ON

c) Transmit a MAYDAY message

d) Disconnect the autopilot

26. The OBS is set to 235°. The indications of the VOR are half full scale deflection left and 'to'. The aircraft is on the radial:

a) 230°

b) 050°

c) 240°

d) 060°

27. When leaving the NAT HLA oceanic control area for a domestic controlled area, the pilot has to:

a) Take the Mach number specified in this initial flight plan

b) Maintain the Mach number previously assigned up to the last position shown in the oceanic clearance

c) Take the Mach number provided for this type of flight by their airline

d) Take any Mach number

28. Longitudinal CG location can be expressed:

a) As a percentage of the MAC from its trailing edge.

b) As a percentage of the MAC from its leading edge.

c) With respect to the centre of pressure.

d) With respect to the neutral point.

29. The primary duty provided by a radar unit is:

a) To provide radar separation.

b) To assist aircraft where navigation appears unsatisfactory.

c) To assist aircraft due to failure of airborne equipment.

d) To assist aircraft on the location storms.

30. The selection of code 7600 on an aircraft SSR transponder indicates:

a) An emergency

b) Radio communication failure

c) Transponder malfunction

d) Unlawful interference with the planned operation of the flight

31. Below the optimum cruise altitude:

a) The IAS for long range cruise increases continuously with decreasing altitude

b) The TAS for long range cruise increases continuously with decreasing altitude

c) The Mach number for long range cruise decreases continuously with decreasing altitude

d) The Mach number for long range cruise increases continuously with decreasing altitude

32. The floor limit of an aircraft cargo hold is 5000 N/m². It is planned to load-up a cubic container measuring 0,4 m of side. Its maximum gross mass must not exceed: (assume g = 10 m/s²)

a) 80 kg

b) 320 kg

c) 32 kg

d) 800 kg

33. An aircraft was over 'A' at 1435 hours flying direct to 'B'. Given: Distance 'A' to 'B' 2900 NM True airspeed 470 kt, Mean wind component 'out' +55 kt, Mean wind component 'back' -75 kt, Safe endurance 9 HR 30 MIN. The distance from 'A' to the Point of Safe Return (PSR) 'A' is:

a) 1759 NM

b) 1611 NM

c) 2844 NM

d) 2141 NM

34. In accordance with EASA-OPS, an operator must ensure that the MDH for an ILS approach without the glidepath (LLZ only) is not lower than:

a) 200 ft

b) 300 ft

c) 250 ft

d) 350 ft

35. Which Q-code is used to report altitude?

a) QFE

b) QNH

c) QNJ

d) QFF

36. The fuel tanks of aircrafts must be checked for water

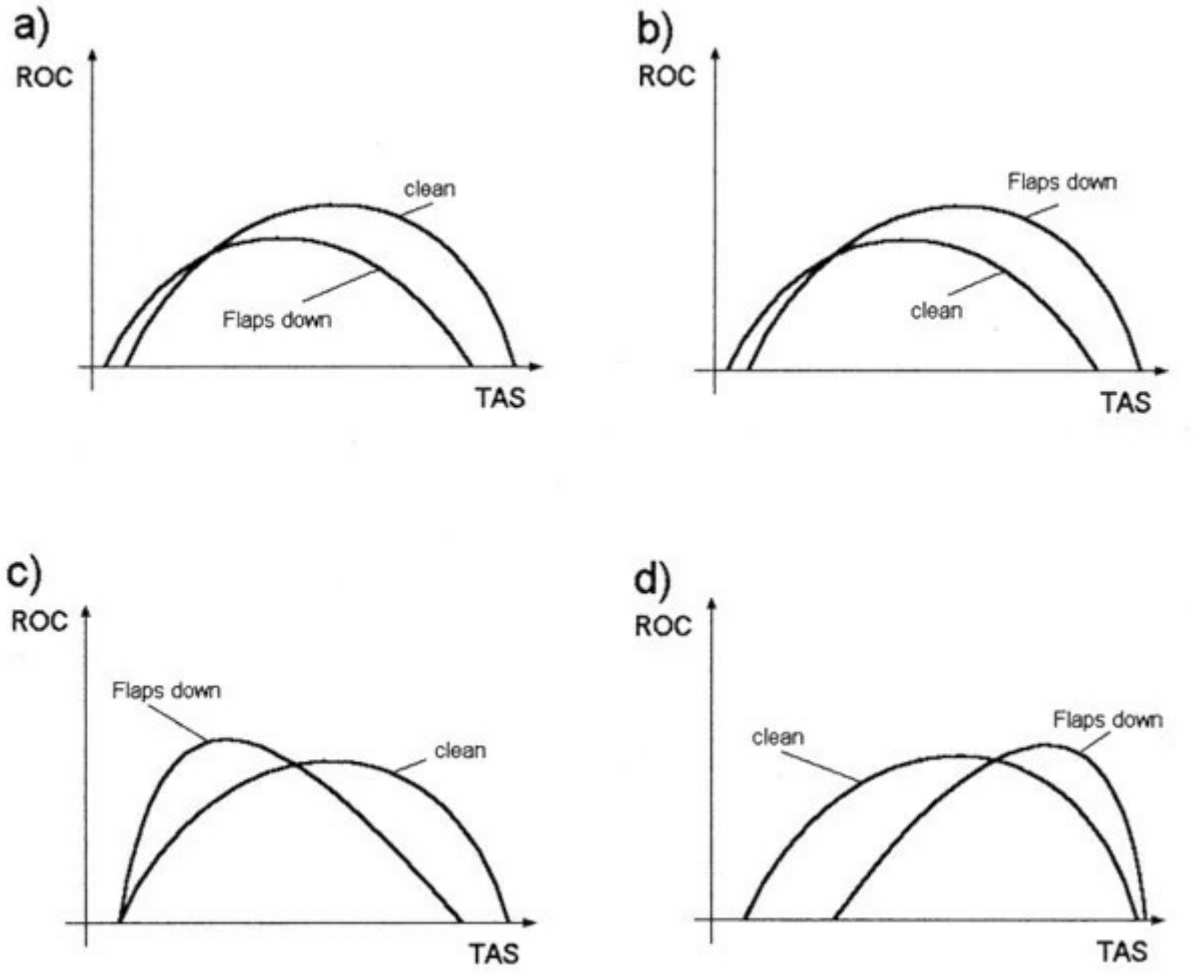
a) Immediately after every refuelling.

b) During refuelling.

c) Before the first flight of the day or after a long turnaround time.

d) Before each flight.

37. Considering a rate of climb diagram (ROC versus TAS) for an aeroplane. Which of the diagrams shows the correct curves for 'flaps down' compared to 'clean' configuration?



a) B

b) C

c) A

d) D

38. Which force(s) affect(s) the otoliths in the utriculus and sacculus?

a) Gravity alone

b) Linear acceleration and angular acceleration

c) Gravity and linear acceleration

d) Angular acceleration

39. Maximum Tyre Speed can limit the Lift-off Speed. Which kind of speed can be directly used to determine this limitation?

a) Groundspeed

b) EAS

c) TAS

d) IAS

40. The navigation plan reads: Trip fuel: 100 kg Flight time: 1h35min Taxi fuel: 3 kg Block fuel: 181 kg The endurance on the ICAO flight plan should read:

a) 2h 49 min

b) 2h 52 min

c) 2h 04 min

d) 1h 35 min

41. The "Equation of time":

a) Is used to calculate mean time when standard time is known.

b) States the difference between celestial time an apparent time.

c) Is used when calculation the difference between UTC and LMT.

d) States the difference in time of transit of mean Sun and the apparent Sun any particular day.

42. According to DOC 4444 (ICAO), a wake turbulence non-radar separation minima of 2 minutes shall be applied to:

a) MEDIUM aircraft taking-off behind a HEAVY aircraft from an intermediate part of a parallel runway separated by less than 760 m

b) MEDIUM aircraft landing behind a HEAVY aircraft

c) LIGHT aircraft landing behind a MEDIUM aircraft

d) LIGHT aircraft taking-off behind a MEDIUM aircraft from an intermediate part of the same runway

43. On aerodromes aircraft taxiing on the manoeuvring area of an aerodrome shall give way to:

a) Aircraft taking off or about to take off
b) All vehicles moving on the apron except the 'follow me' vehicle
c) Other converging aircraft
d) Other vehicles and pedestrians

44. Spark plug fouling is more likely to happen if:

a) Power is increased too abruptly.
b) The aircraft descends without a mixture adjustment.
c) The engine runs at the authorized maximum continuous power for too long.
d) The aircraft climbs without mixture adjustment.

45. In a given configuration the endurance of a piston engine aeroplane only depends on:

a) Altitude, speed, mass and fuel on board.
b) Speed, mass and fuel on board.
c) Speed and mass.
d) Altitude, speed and mass.

46. Due to the rotation of the Earth, the apparent drift of a horizontal free gyroscope at a latitude of 45°N is:

a) 2° per hour to the right.
b) 15° per hour to the left.
c) 11° per hour to the right.
d) 7,5° per hour to the left.

47. What does the abbreviation 'RNAV' mean?

a) Radar aided navigation
b) Route navigation
c) Area navigation
d) Radio navigation

48. The maximum intensity floor loading for an aeroplane is given in the Flight Manual as 650 kg per square metre. What is the maximum mass of a package which can be safely supported on a pallet with dimensions of 80 cm by 80 cm?

a) 416.0 kg

b) 101.6 kg

c) 41.6 kg

d) 1015.6 kg

49. In the transonic range lift will decrease at the shock stall due to the

a) Attachment of the shock wave on the trailing edge of the wing.

b) First appearance of a shock wave at the upper side of the wing.

c) Separation of the boundary layer at the shock waves.

d) Appearance of the bow wave.

50. A propeller blade is twisted, so as to

a) Decrease the blade tangential velocity from the blade root to the tip.

b) Avoid the appearance of sonic phenomena.

c) Allow a higher mechanical stress.

d) Keep the local angle of attack constant along the blade.

51. An increase in the amount of carbon dioxide in the blood leads to:

a) A reduction of red blood cells

b) A decrease of acidity in the blood

c) An improving resistance to hypoxia

d) An increased respiratory rate

52. The correct order of decreasing freezing points of the three mentioned fuels is:

a) Jet A, Jet A-1, Jet B.

b) Jet B, Jet A, Jet A-1.

c) Jet A-1, Jet A, Jet B.

d) Jet B, Jet A-1, Jet A.

53. Allowed traffic load is the difference between:

a) Allowed take off mass and basic empty mass.

b) Allowed take off mass and basic empty mass plus trip fuel.

c) Operating mass and basic empty mass.

d) Allowed take off mass and operating mass.

54. The angular difference, on a Lambert conformal conic chart, between the arrival and departure track is equal to:

a) Earth convergence

b) Conversion angle

c) Chart convergence

d) Difference in longitude

55. A twin engine aeroplane in cruise flight with one engine inoperative has to fly over high ground. In order to maintain the highest possible altitude the pilot should choose:

a) The long range speed

b) The speed corresponding to the minimum value of (lift / drag)^3/2

c) The speed corresponding to the maximum value of the lift / drag ratio

d) The speed at the maximum lift

56. The purpose of a compressor bleed valve is to prevent surging:

a) At low compressor RPM.

b) With altitude.

c) Of the first compressor stages.

d) Generated by foreign object ingestion.

57. For aerodrome operating minima, an operator must ensure that system minima for non-precision approach procedures are not lower than the following MDH values:

a) VOR facility, lowest MDH=250 ft

b) ILS facility without glidepath (localizer) lowest MDH=200 ft

c) VOR/DME facility, lowest MDH=300 ft

d) NDB facility, lowest MDH=350 ft

58. Which word or phrase shall be used to indicate a separation between portions of a message?

a) I say again

b) Stop

c) Over

d) Break

59. What is the maximum speed adjustment that a pilot should be requested to make when under radar control and established on intermediate and final approach?

a) ± 15 KT

b) ± 20KT

c) ± 25 KT

d) ± 10KT

60. The pitch up effect of an aeroplane with swept wing in a stall is due to the

a) Wing tip stalling first

b) Wing root stalling first

c) Forward movement of the centre of gravity

d) Aft movement of the centre of gravity

61. Except for airplanes under 5,7 t airworthiness certificate of which is subsequent to 31 march 1998, a flight data recording system must be able to store the recorded data for a minimum of the last:

a) 30 minutes.

b) 10 hours.

c) 60 minutes.

d) 25 hours.

62. The time taken for the transmission of an interrogation pulse by a Distance Measuring Equipment (DME) to travel to the ground transponder and return to the airborne receiver was 2000 micro-second, including time delay. The slant range from the ground transponder was:

a) 186 NM

b) 296 NM

c) 158 NM

d) 330 NM

63. What does the abbreviation 'H24' mean?

a) Sunrise to sunset

b) Continuous day and night service

c) No specific working hours

d) Sunset to sunrise

64. The Dry Operating Mass includes:

a) Crew and crew baggage, catering, removable passenger service equipment, potable water and lavatory chemicals.

b) Passengers baggage and cargo.

c) Fuel and passengers baggage and cargo.

d) Unusable fuel and reserve fuel.

65. In what type of nominal orbit are NAVSTAR GPS satellites placed?

a) Elliptical

b) Geo-stationary

c) Circular

d) Pole to pole

66. A jet transport aeroplane exhibits pitch up when thrust is suddenly increased from an equilibrium condition, because the thrust line is below the:

a) Drag line of action.

b) CG.

c) Centre of pressure.

d) Neutral point.

67. Which design features improve static lateral stability? 1. Anhedral. 2. Dihedral. 3. Forward sweep. 4. Sweepback. The combination that regroups all of the correct statements is:

a) 1, 4.

b) 2, 3.

c) 1, 3.

d) 2, 4.

68. On the readability scale what does READABILITY 1 mean?

a) Readable but with difficulty.

b) Unreadable.

c) Readable.

d) Perfectly readable.

69. An aeroplane is flying at TAS 180 KT on a track of 090° The W/V is 045° / 50 KT. How far can the aeroplane fly out from its base and return in one hour?

a) 85 NM

b) 176 NM

c) 56 NM

d) 88 NM

70. Given: TAS = 95 kt, HDG (T) = 075°, W/V = 310/20kt. Calculate the drift and GS?

a) 9L - 105 kt

b) 10L - 104 kt

c) 8R - 104 kt

d) 9R - 108 kt

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Response Scheme

Compare your answers with the following diagram and mark your score!

01: **D**	02: **D**	03: **A**	04: **B**
05: **C**	06: **B**	07: **A**	08: **A**
09: **C**	10: **C**	11: **B**	12: **C**
13: **C**	14: **C**	15: **B**	16: **A**
17: **C**	18: **D**	19: **D**	20: **C**
21: **B**	22: **A**	23: **D**	24: **A**
25: **A**	26: **B**	27: **B**	28: **B**
29: **A**	30: **B**	31: **C**	32: **A**
33: **D**	34: **C**	35: **B**	36: **C**
37: **C**	38: **C**	39: **A**	40: **A**
41: **D**	42: **B**	43: **A**	44: **D**
45: **A**	46: **C**	47: **C**	48: **A**
49: **C**	50: **D**	51: **D**	52: **A**
53: **D**	54: **C**	55: **C**	56: **A**
57: **D**	58: **D**	59: **B**	60: **A**
61: **D**	62: **C**	63: **B**	64: **A**
65: **C**	66: **B**	67: **D**	68: **B**
69: **A**	70: **D**		

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Response form

Use this form to mark your answers

01:	02:	03:	04:
05:	06:	07:	08:
09:	10:	11:	12:
13:	14:	15:	16:
17:	18:	19:	20:
21:	22:	23:	24:
25:	26:	27:	28:
29:	30:	31:	32:
33:	34:	35:	36:
37:	38:	39:	40:
41:	42:	43:	44:
45:	46:	47:	48:
49:	50:	51:	52:
53:	54:	55:	56:
57:	58:	59:	60:
61:	62:	63:	64:
65:	66:	67:	68:
69:	70:		